



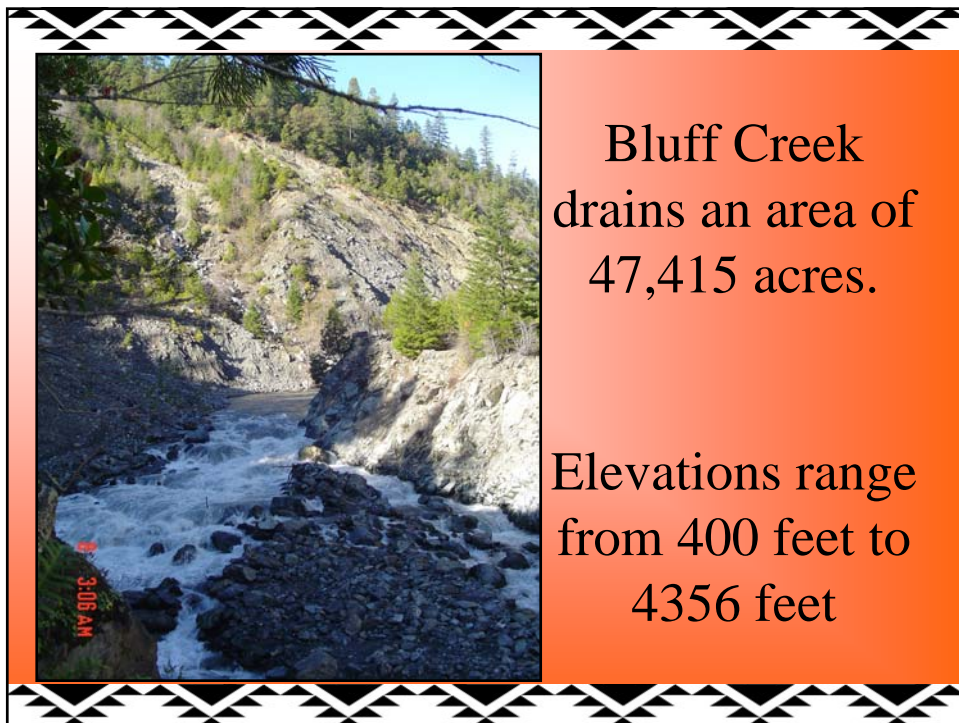
Karuk Watershed
Restoration Program
Tribal Nonpoint Source Program Workshop
2007

Implementing NPS Projects on a Watershed Scale

Watershed Scale Implementation

**Karuk Watershed Restoration Program
Bluff Creek Watershed Restoration**





Bluff Creek
drains an area of
47,415 acres.

Elevations range
from 400 feet to
4356 feet



Road Related Watershed Impacts

- Increased Non-Point\Point Source Sediment Transport and Deposition
- Impacts to Domestic Water Supply
- Interrupted Hydrologic Patterns
- Impacts on Critical Cold-Water Refugia in Klamath River
- Salmonid Migration Barriers
- Overall Degradation of Spawning \ Rearing Habitat
- Spread of Plant Pathogens and Noxious Weeds



ROAD DECOMMISSIONING GOALS

“Concentrated rehabilitation efforts to speed the restoration of naturally functioning ecosystems to a condition similar to what existed prior to disturbance.”

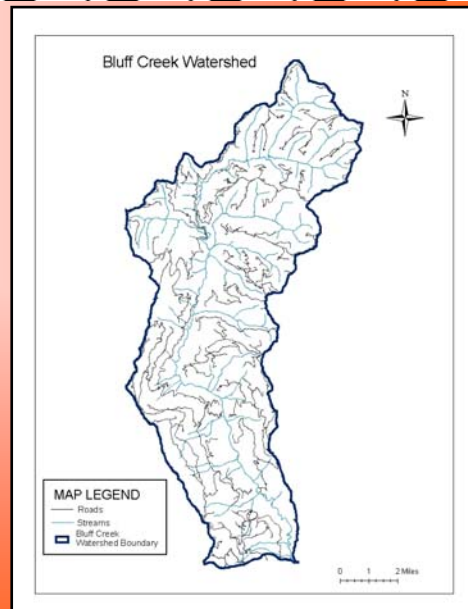
- Minimize Erosion and Sediment Deposition from Past Land Uses
- Re-establishing native patterns of vegetation, and Protecting Aquatic and Riparian Resources

Questions Considered

- How significant is the amount of sediment that is delivered to streams as a result of road failures?
- What are we doing to assess road related sediment risk?
- What road restoration measures have we implemented to date?
- Are we making a difference?

Bluff Creek Restoration Project

- 88.39 miles of planned decommissioning
- Sediment Savings = 85,938 yd³



Road failures were found to be significant sources of sediment to anadromous streams in Bluff Creek

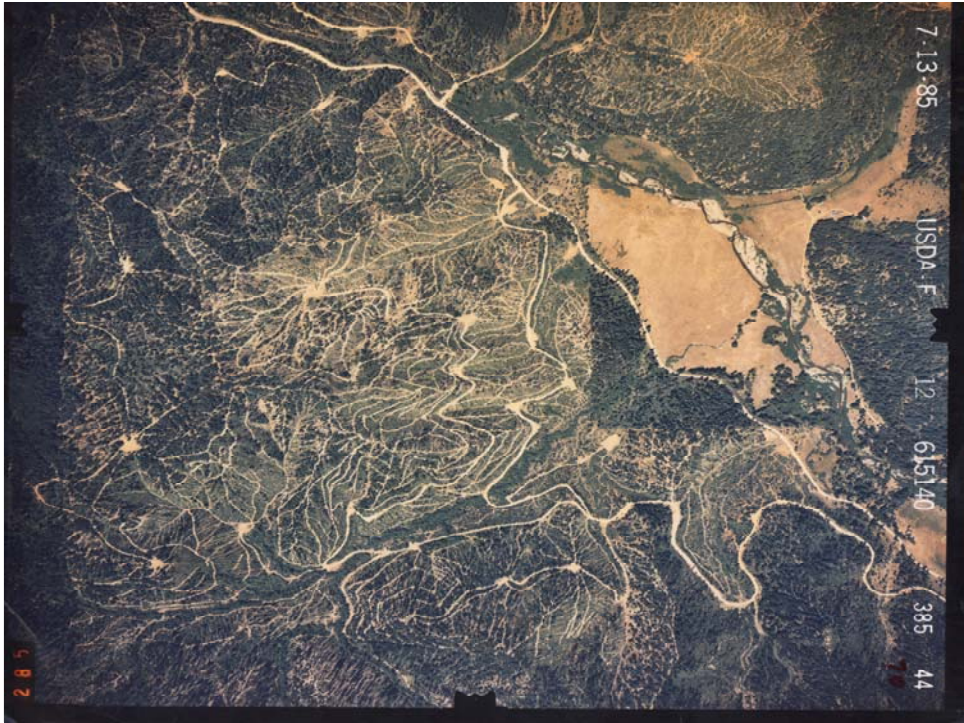
- Mass wasting associated with large storm events
- Culverts plugged with sediment and debris
- Road locations across sensitive terrain
- Road maintenance concerns







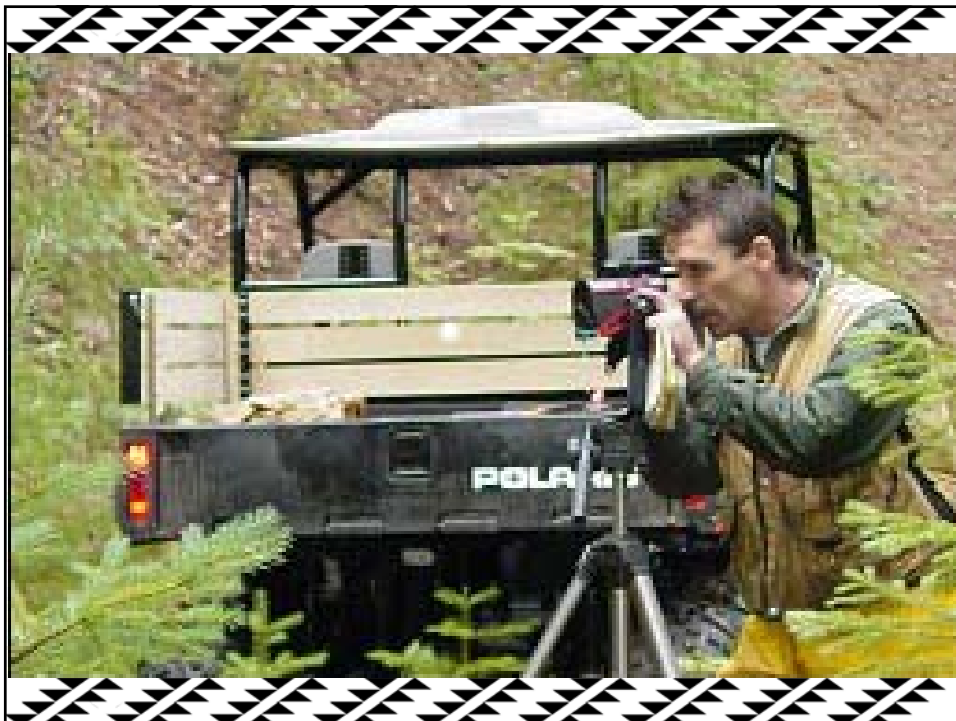




What are we doing to understand how road related sediment is delivered to our streams and rivers?

Field Inventories at the watershed scale

- Assessment of road condition and geology
- Proximity to Domestic Water Intake
- Proximity to anadromous fish habitat
- Number of sites ranked high for treatment or needing maintenance
- Risk of stream crossing diversions
- Risk of road surface erosion at crossings
- Adequacy of road drainage between crossings



Are We Making a Difference?

- Project Level Monitoring and Evaluation
 - Pre and Post Photo Monitoring
 - Project Implementation
 - BMP Effectiveness
- Long-Term Monitoring
 - Landscape/watershed scale monitoring
 - ERFO
 - Adaptive Management

Stream Crossing Excavations and Post-Treatment Erosion

Since 1998 over 265,000 Cubic Yards of Sediment Savings

Excavated Stream Crossing Volume (yd ³)	Percent of stream crossings	Average Volume Excavated (yd ³)	Average post-treatment erosion (yd ³)	Percent of excavated volume lost to post-treatment erosion
0-400	64	153	6.7	5.1
400-1000	20	612	21	3.3
>1000	16	4692	124	3.2
All Sites	100	967	28	4.5

Post treatment monitoring was conducted in 2002 and 2003 for sites that have gone through at least one winter season. Post-treatment erosion was measured in the field and related to the total amount of fill volume excavated from the crossing.

Preliminary results indicate that post-treatment erosion was less than 5 percent of the total fill volume removed.

Watershed Restoration Partnership *for* Success











Value of Program

- Reduction in Non-Point Source Pollution
- Maintenance of Cultural Values Through Restoration of Natural Resources
- Threat to Anadromous Fisheries Reduced
- Livable Wage Jobs for Tribal Members
- Benefit to Local Economy
- Continuation of a Long-Term Partnership with Federal Agencies

Preserving cultural values and healthy ecosystems for a sustainable future...

